CLAIMS

1. (Currently amended) In a digital wireless receiver, a method of detecting the presence of a data packet in a received radio frequency (RF) signal comprising:

down-converting said RF signal into in-phase (I) and quadrature (Q) baseband signals;

removing direct current (DC) offsets from ~~said~~ the I and Q baseband signals;

modulating ~~said~~ the I and Q baseband signals;

~~performing amplitude normalization on said modulated I and Q baseband signals;~~

mapping the modulated I and Q baseband signals to a unit circle on a PSK constellation;

comparing ~~said amplitude normalized~~ the mapped I and Q baseband signals to a reference signal via a complex correlator;

detecting a peak of ~~said~~ the complex correlator output; and

in response to ~~said~~ the peak being above a predefined threshold, indicating that a data packet has been received.

2. (Currently amended) The method of claim 1 where~~in said~~ the performing amplitude normalization comprises mapping ~~said~~ the modulated I and Q baseband signals to a quantized phase shift keying (PSK) signal constellation.

3. (Currently amended) The method of claim 2 where~~in said~~ the detecting further comprises:

converting ~~said~~ the complex correlator output from complex to polar value;

calculating the signal magnitude of ~~said~~ the polar value; and

determining if a data packet containing information bits is present.

4. (Currently amended) The method of claim 3 where~~in said~~ the calculating is performed using the formula (mag)^2.

5. (Currently amended) The method of claim 4 where~~in said~~ the determining comprises employing a peak signal envelope detection technique.

6. (Currently amended) The method of claim 4 where~~in~~ the determining comprises comparing the signal magnitude to a minimum threshold and, indicating that a correct signature was received in response to ~~said~~ the signal magnitude exceeding ~~said~~ the minimum threshold.

7. (Currently amended) In a wireless digital receiver, a circuit for detecting the presence of a data packet in a received radio frequency (RF) signal comprising:

a direct current (DC) offset module to correct for local oscillator (LO) leakage in in-phase (I) and quadrature (Q) baseband signals derived from ~~said~~ the received RF signal;

an acquisition module communicating with ~~said~~ the DC offset module comprising:

a M-ary phase shift keying (PSK) mapper ~~for mapping said~~ to map the DC offset corrected I and Q baseband signals to a quantized ~~PSIS~~ PSK signal constellation;

a complex correlator ~~receiving~~ to receive input from ~~said~~ the M-ary PSK mapper ~~for comparing~~ and to compare the ~~said~~ mapped I and Q baseband signals to a reference; and

a detector ~~receiving~~ to receive input from ~~said~~ the complex correlator ~~for determining~~ and determine the presence of a correct signature.

8. (Currently amended) The circuit of claim 7 where~~in~~ the detector comprises:

a complex to polar (C2P) converter ~~for converting~~ to convert the output of ~~said~~ the complex correlator into an amplitude and phase value;

a magnitude calculation module ~~for determining~~ to determine a signal size of ~~said~~ the converted output; and

a peak detection module communicating with ~~said~~ the magnitude calculation module ~~for determining~~ to determine the presence of information bits.

9 (Currently amended) The circuit of claim 8 where~~in~~ ~~said~~ the received RF signal comprises a quadrature amplitude modulated (QAM) signal.

10. (Canceled)

11. (Currently amended) A method for detecting the presence of a data packet in a received

quadrature amplitude modulated (QAM) radio frequency (RF) signal, the method comprising:

mapping ~~said~~ the QAM RF signal to a quantized phase shift keying (PSK) constellation by:

removing direct current (DC) offsets from I and Q baseband signals derived from ~~said~~ the received QAM RF signal;

modulating ~~said~~ the I and Q baseband signals; and

~~performing amplitude normalization on said modulated I and Q baseband signals;~~

mapping the modulated I and Q baseband signals to a unit circle on a PSK constellation; and

processing in a matched complex correlator to detect the presence of a data packet by:

comparing ~~said~~ the amplitude normalized I and Q baseband signals to a reference signal via a complex correlator;

detecting a peak of ~~said~~ the complex correlator output; and

if ~~said~~ the peak is above a predefined threshold, indicating that a data packet has been received.

12. (Currently amended) The method of claim 11 where~~in~~ ~~said~~ the performing amplitude normalization comprises mapping the ~~said~~ modulated I and Q baseband signals to a quantized phase shift keying (PSK) signal constellation.

13. (Currently amended) The method of claim 12 where~~in~~ ~~said~~ the aid detecting further comprises:

converting ~~said~~ the complex correlator output from complex to polar value;

calculating the signal magnitude of ~~said~~ the polar value; and

determining whether a data packet containing information bits is present.

14. (Currently amended) The method of claim 13 where~~in~~ ~~said~~ the determining comprises comparing the signal magnitude to a minimum threshold and indicating that a correct signature was received in response to ~~said~~ the signal magnitude exceeding ~~said~~ the minimum threshold.

15. (Currently amended) In a wireless digital receiver, a circuit ~~for detecting~~ to detect the presence of a data packet in a received radio frequency (RF) signal, ~~said~~ the circuit comprising:

a direct current (DC) offset module to correct for local oscillator (LO) leakage in in-phase (I) and quadrature (Q) baseband signals derived from ~~said~~ the received RF signal; and

an acquisition module ~~receiving said~~ to receive the corrected I and Q baseband signals ~~for performing mapping, comparing and detecting~~ to perform map, compare, and detect functions in relation thereto to determine a presence of information bits associated with ~~said~~ the data packet.

16. (Currently amended) The circuit of claim 15 where~~in said~~ the acquisition module comprises:

a M-ary phase shift keying (PSK) mapper ~~for mapping said~~ to map the I and Q baseband signals to a quantized PSK signal constellation;

a complex correlator ~~receiving~~ to receive input from ~~said~~ the M-ary PSK mapper ~~for comparing said~~ and to compare the mapped I and Q baseband signals to a reference; and

a detector ~~receiving~~ to receive input from ~~said~~ the complex correlator ~~for determining~~ and to determine a presence of a correct signature.

17. (Currently amended) The circuit of claim 16 where~~in~~ the detector comprises:

a complex to polar (C2P) converter ~~for converting~~ to convert the output of ~~said~~ the complex correlator into an amplitude and phase value;

a magnitude calculation module ~~for determining~~ to determine a signal size of ~~said~~ the converted output; and

a peak detection module communicating with ~~said~~ the magnitude calculation module ~~for determining the~~ to determine a presence of information bits.

18. (Currently amended) The circuit of claim 17 where~~in said~~ the received RF signal comprises a quadrature amplitude modulated (QAM) signal.

19. (New) A quadrature amplitude modulated (QAM) receiver, comprising:
In a wireless digital receiver, a circuit for detecting the presence of a data packet in a received radio frequency (RF) signal comprising:

a direct current (DC) offset module to correct for local oscillator (LO) leakage in in-phase (I) and quadrature (Q) baseband signals derived from a radio frequency (RF) signal;

an acquisition module communicating with the DC offset module comprising:

a M-ary phase shift keying (PSK) mapper to map the corrected I and Q baseband signals to a quantized PSK signal constellation;

a complex correlator to receive input from the M-ary PSK mapper and to compare the mapped I and Q baseband signals to a reference; and

a detector to determine the presence of a correct signature responsive to the complex correlator.

20. (New) The QAM receiver of claim 19 where the detector comprises:

a complex to polar (C2P) converter to convert the output of the complex correlator into an amplitude and phase value;

a magnitude calculation module to determine a signal size of the converted output; and

a peak detection module communicating with the magnitude calculation module to determine the presence of information bits.

21. (New) A quadrature amplitude modulated (QAM) receiver, comprising:

a direct current (DC) offset module to correct for local oscillator (LO) leakage in in-phase (I) and quadrature (Q) baseband signals derived from a received radio frequency (RF) signal; and

an acquisition module to perform at least one of a map, compare, and detect functions on the corrected I and Q baseband signals to determine a presence of information bits associated with the data packet.

22. (New) The QAM receiver of claim 21 where the acquisition module comprises:

a M-ary phase shift keying (PSK) mapper to map the I and Q baseband signals to a quantized PSK signal constellation;

a complex correlator to receive input from the M-ary PSK mapper and to compare the mapped I and Q baseband signals to a reference; and

a detector to receive input from the complex correlator and to determine a presence of a correct signature.

23. (New) The QAM receiver of claim 21 where the detector comprises:

a complex to polar (C2P) converter to convert the output of the complex correlator into an amplitude and phase value;

a magnitude calculation module to determine a signal size of the converted output; and

a peak detection module communicating with the magnitude calculation module to determine a presence of information bits.